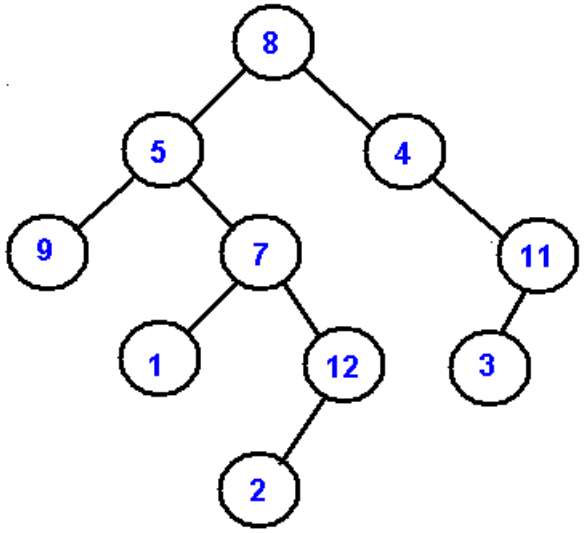
EECS 214 Worksheet 2

For answering the following questions assume that you are given the following tree:



A.Trees

1) Is element 11 a leaf? Who is its parent?

2) How many parents can elements have?

3) No node in a binary tree has more than 2 children (true or false)

4) In a post-order traversal, root nodes comes last (true or false)

B.Tree Representations

1) Write a TreeNode class using an array representation to list the children

   class TreeNode{

   }

2) Write a TreeNode class for a binary tree

   class TreeNode{

   }

C. Breadth First Search

1) What is the data-structure you need to keep track of where you've been when you're performing a BFS?

2) Modify the tree above so that the elements would be printed in numerical order if printed by a breadth-first search (draw a tree).

3) Write a BFS function BFSwalk(TreeNode root) to traverse a binary tree

```
BFSWalk(TreeNode root){

}
```

D. Depth First Search

1) How would you modify the BFS function you wrote in C.3) to perform DFS traversal? (explain with words)

2) Write three functions to perform pre-order / in-order / post-order traversal of a binary tree (use the execution stack)

```
Preorder(TreeNode root){




}

Inorder(TreeNode root){




}

Postorder(TreeNode root){




}
```

a. What are the outputs for the tree you are given above?

   Preorder:

   Inorder:

   Postorder: